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To:

Mr. Pedro J. Cuevas

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(Including Transmittal)

Project Name:

Patent Application 09/895,709

Project No.:

Remarks:

With this transmittal we submit a two-page
response to office communication re this
case.

Corrected drawings as suggested, and
A photograph of a model of our
apparatus showing how the sails/chain
assembly would travel to permit full force
of the wind on each and every sail
(lower half of the photo shows the sails on
their return path.)

Copy To:

From:

D.N. Staikos

#5/Response.
Hawkins
6-21-02

June 15, 2002

Mr. Pedro J. Cuevas
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Washington, DC 20231

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Re.: Application No. 09/895,709
By: Staikos et al.

We respectfully provide the following in response to each of the numbered statements contained in Office Communication dated 3/25/2002, concerning Application No. 09/895,709.

1. 3B, which denotes the lower boom of the sail(s) is missing from FIG.4. The correction is made; Reference signs "1A/8" and "1B/9" are missing from FIG.2. The correction is made on the resubmitted figures. However, these signs are included in FIG. 3, 4, and 5 but without the "/". This is also corrected.
2. We do not believe there are any minor errors in the specification as presented.
3. We believe our invention represents a substantial improvement over that described by Diggs in US Patent No. 4,186,314 or any other similar patent. Our invention pertains to a device that makes full utilization of the wind power impinging onto each and every sail on both locations in their path around the oval track; this is clearly pointed out in the following paragraphs of the Specification as presented, as well as in the figures and the attached photo:
Specification paragraphs: 2nd, 3rd, 4th, on page 4.
Figures: 1, 2, 3, 4, 5 but particularly evident in FIGs. 3 and 5 both figures representing an end-view of the apparatus of FIG. 2 and of FIG. 4 respectively. In these figures, the full force of the wind (upper arrow 5) impinges on the sail(s) as they first encounter said wind, and again, where the full force of the wind (lower arrow 5) impinges on the rear surface of the sail(s) as they travel on their return path. The attached photos of a model of our apparatus we believe clearly shows its unique design characteristics.
In contrast, wind power utilization in the Diggs apparatus is only a little over 50% since the sails on their return path receive a portion of the leftover wind force (see lines 10-30 on page 4 of US Patent 4,186,314, and particularly their statement "... Vanes 24 retains some velocity and thus some unexpended energy.")
4. We have carefully read US Patent 4,186,314 to Diggs and we do not see any mention of "...said sprocket wheels having their axles inclined at angles greater than zero from the direction of the wind." In fact, this is the basis of our invention (see response to Item 3).

5. We are willing to withdraw our Claim #2. However, we feel that every energy conversion device be complete including a connection between at least one of its axles and an electrical power motor when such is being used.
6. Again, we have carefully studied Diggs' disclosures and cannot see any mention to "...and having their axles inclined at angles greater than zero degrees from the direction of the wind." Diggs' FIG. 2 clearly shows the wind blades 24 directly superposed onto each other as they enter their return path of the oval track (see also our response to Item 3).
7. Again, our invention is based on a technique for utilizing the maximum power of the wind by each and every sail, in a system where sprocket wheels and chains are used to convey the sails around an oval track. Thus we provide an improved, high-efficiency wind-energy conversion apparatus of compact dimensions but with the maximum active sail surface area.
8. We agree on the principle of 35 USC par. 103, however we believe that the improvements we offer in a wind-power-generating system are unique and not obvious.
9. Here again, our invention is based on the unique placement of two or four sprocket wheels which carry and guide the chains/sails assembly. Ockels in US Patent 6,072,245 may be using four wheels and two pulling cables (1A + 1B) in his wind-driven driving apparatus employing kites, but is not claiming tilting or positioning of the sprocket wheels so as to provide the full power of the wind onto said kites. In fact, in Ockles apparatus the kites are provided with means to **reduce** any uplifting action of the wind on their return (descending) path and thus do not contribute in driving the associated electric generator but are acting against any such end result since the wind action is ".....to ensure said kites do not hang from the return element 11" (line 13, page 5 of US Patent 6,072,245).
10. What we claim is that the design of our apparatus is unique (see our responses to previous items and the attached photograph of a model of our apparatus) and can be used so that the sails travel essentially in a horizontal direction (Photo - wind direction perpendicular to surface of paper) or in a substantially vertical direction (view photo rotated 90 degrees). In the Diggs multi-module system the sails appear to move in an up-and-down direction and the system, that is the total number of such apparatus, may be moved in a horizontal direction at the pivot 84 to face the oncoming wind head on or at other angles.
The vertical version of the apparatus of our invention, Claim #7, is suspended so that it can respond automatically to different wind velocities. When wind velocities become excessive, the system deflects like a pendulum at the points of suspension to reduce the angle of wind impinging on the sails and consequently limiting the traveling speed of the sails/chain assembly, preventing possible damage.

Respectfully submitted by

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